

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): ~~Any~~ A method for analysis of ~~biomolecules at least one~~
sample containing molecules of at least one first chemical species, comprising: removal of a
substrate from one microfluidic chip and insertion of the said substrate into a second microfluidic
chip for further processing or analysis;

at least one substrate, wherein an array of immobilized molecules of two or more second
chemical species is deposited on distinct and known regions of the substrate;

at least one microfluidic device containing at least one channel with at least one port;

a step of insertion of the substrate into the channel in the microfluidic device;

a step of introduction of the sample into the channel, wherein the molecules of the first
chemical species come in contact with the molecules of the second chemical species;

a step of removing the sample from the channel; and

a step of detecting the presence of any molecules of the first chemical species bound to the
immobilized molecules of the second chemical species.

Claim 2 (currently amended): ~~A~~ The method of claim 1 ~~comprising the substrate is inserted~~
~~into and removed from more than two chips, wherein at least two microfluidic devices are used,~~
comprising:

at least one substrate, wherein an array of immobilized molecules of two or more second chemical species is deposited on distinct and known regions of the substrate;

at least two microfluidic devices, each containing at least one channel with at least one port;

a step of insertion of the substrate into the channel in the first microfluidic device;

a step of introduction of the sample into the channel in the first microfluidic device, wherein the molecules of the first chemical species come in contact with the molecules of second chemical species;

a step of removal of the substrate from the first microfluidic device;

a step of insertion of the substrate into the channel in the second microfluidic device;

a step of introduction of a detection reagent into the channel in the second microfluidic device, wherein the molecules of the detection reagent come in contact with the molecules of first chemical species;

a step of detecting the presence of any molecules of the detection reagent bound to the molecules of the first chemical species on the substrate.

Claim 3 (currently amended): ~~A-The method of claim 2 1 for analysis of two or more samples, comprising: two substrates removed from two different microfluidic chips are combined for further processing in a third microfluidic chip~~

at least two substrates, wherein each substrate contains an array of immobilized molecules of two or more second chemical species deposited on distinct and known regions of each substrate;

at least one first microfluidic devices containing at least one channel with at least one port;

at least one second microfluidic devices containing at least one channel with at least one
port;

at least one third microfluidic device containing at least two channels;

a step of insertion of the first substrate into the channel in the first microfluidic device;

a step of insertion of the second substrate into the channel in the second microfluidic
device;

a step of introduction of the first sample into the channel in the first microfluidic device,
wherein the molecules of the first chemical species come in contact with the molecules of second
chemical species;

a step of introduction of the second sample into the channel in the second microfluidic
device, wherein the molecules of the first chemical species come in contact with the molecules of
second chemical species;

a step of removal of the first and second substrates from the first and the second
microfluidic devices;

a step of insertion of the first substrate into a first channel and of the second substrate into a
second channel in the third microfluidic device;

a step of introduction of a detection reagent into the channels in the third microfluidic
device, wherein the molecules of the detection reagent come in contact with the molecules of
first chemical species;

a step of detecting the presence of any molecules of the detection reagent bound to the molecules of the first chemical species on the substrates.

Claim 4 (withdrawn):

Claim 5 (withdrawn):

Claim 6 (withdrawn):

Claim 7 (withdrawn):

Claim 8 (withdrawn):

Claim 9 (withdrawn):

Claim 10 (canceled):

Claim 11 (new): The method of claim 1 wherein the molecules of the first species are fluorescently labeled.

Claim 12 (new): The method of claim 1 wherein:
the channel in the microfluidic device contains at least two ports; and
the substrate is inserted into the channel using a first port and the sample is introduced into the channel using a second port.

Claim 13 (new): The method of claim 1 wherein:
at least one channel in the microfluidic device contains at least three ports;
the substrate is inserted into the channel using a first port;
the sample is introduced into the channel using a second port; and
the sample is removed from the channel using a third port.

Claim 14 (new): The method of claim 2 wherein after removal from the second microfluidic device and before insertion into the third microfluidic device, the substrate is inserted into and removed from at least one fourth microfluidic device.

Claim 15 (new): The method of claim 2 wherein the molecules of the detection reagent are fluorescently labeled.

Claim 16 (new): The method of claim 3 wherein at least one second chemical species present on one substrate is present on every other substrate.

Claim 17 (new): The method of claim 3 wherein at least one chemical species present on one substrate is not present on any other substrate.

Claim 18 (new): The method of claim 3 wherein:
at least one second chemical species present on one substrate is present on every other
substrate; and
at least one chemical species present on one substrate is not present on any other substrate.

Claim 19 (new): The method of claim 1 wherein the part of the substrate bearing the array of molecules is between one millimeter and ten centimeter long and has a cross-sectional dimension of between ten micrometer and ten millimeters.

Claim 20 (new): The method of claim 1 wherein the substrate is removed from the microfluidic device before detection of the molecules of first chemical species bound to molecules of second chemical species.

Claim 21 (new): The method of claim 1 wherein after introduction and removal of the sample from the microfluidic device, the substrate is removed from the microfluidic device and the molecules of the first chemical species are released from the substrate before detection.

Claim 22 (new): A method to perform a chemical reaction between two or more chemical species and at least one catalyst, comprising:

at least one substrate, wherein an array of immobilized molecules of two or more chemical species is deposited on distinct and known regions of the substrate;

at least one microfluidic device containing at least one channel with at least one port;

a step of insertion of the substrate into the channel in the microfluidic device;

a step of introduction of a solution containing the catalyst into the channel, wherein the molecules of the catalyst react with and modify the molecules of the immobilized chemical species;

a step of removing the solution containing the catalyst from the channel; and

a step of detecting the presence of any modified molecules of the immobilized chemical species.

Claim 23 (new): The method of claim 22 wherein the part of the substrate bearing the array of molecules is between one millimeter and ten centimeter long and has a cross-sectional dimension of between ten micrometer and ten millimeters.